

AMENDMENTS TO THE CLAIMS

Please amend claims 1, 8, 9, 10, 13, 14, 19, 20 and 21, such that the status of the claims is as follows:

1. (Currently amended) A device server system comprising:

serial devices;

a device server for connecting the serial devices to a local area network, the device server comprising:

a FIFO register associated with each serial device, and

a memory queue associated with each serial device;

driver software installed on a host computer with an operating system that is connected to a local area network, the driver software for directing serial port data onto the local area network; and

firmware installed on the device server for facilitating communication between the host computer and a selected one of the serial devices, wherein the firmware directs the serial port data received from the remote computer to the selected one of the serial devices, and wherein the firmware writes portions of the received serial port data to the FIFO registers of associated with the selected one of the serial devices, if [[a]] the memory queue associated with the selected one of the serial devices is empty, before writing remaining data of the received serial port data to the memory queue associated with the selected one of the serial devices.

2. (Original) The system of claim 1 wherein, when an application on the host computer invokes a function involving a serial device, the driver software transfers data intended for the serial device to a transport protocol of the host computer for transmission to the device server.

3. (Original) The system of claim 1 further comprising:
application software installed on the device server for handling device specific flags and timeouts.
4. (Original) The system of claim 1 wherein the device server has an operating system and the firmware application functions within the operating system.
5. (Original) The system of claim 1 wherein the FIFO registers are located in a serial chip associated with each serial device.
6. (Original) The system of claim 1 wherein the driver software utilizes a transport protocol to direct the serial port data onto the local area network.
7. (Original) The system of claim 6 wherein the local area network is an Ethernet network and wherein the transport protocol utilizes Ethernet hardware addresses to route the serial data over the local area network.
8. (Currently amended) A system for connecting serial devices to a local area network comprising:
a device server in communication with the local area network, the device server comprising:
serial connectors for linking one or more serial devices to the device server;
an operating system; and
applications running on the operating system for coordinating communications between the operating system, the local area network ~~network~~, and the serial device;
a serial driver installed on a host computer and for mediating between host application software and host operating system software installed on the host computer, the host computer being in communication with the local area network, wherein the

~~server-serial driver~~ transmits serial data from the host application software over the local area network to a selected serial device linked via one of the serial connectors to the device server;

wherein the applications ~~have a semi-blocking read function for transferring~~ transfer one or more bytes of the serial data from a buffer of the device server to a memory queue associated with the selected serial device to a buffer of the operating system when the one or more bytes appears in the buffer without waiting for a specified byte count or a polling period.

9. (Currently amended) The system of claim 8 wherein the ~~semi-blocking read applications for transferring the serial data returns transfer serial data to the applications on the device server~~ as soon as data is available up to a predefined number of bytes.

10. (Currently amended) The system of claim 8 wherein the serial driver on the host computer uses a transport protocol for transmitting the serial data over the local area network.

11. (Original) The system of claim 10 wherein the transport protocol is TCP.

12. (Original) The system of claim 10 wherein the local area network is an Ethernet network and wherein the transport protocol utilizes Ethernet hardware addresses to route the serial data over the local area network.

13. (Currently amended) A system for connecting serial devices to a network, the system comprising:

host driver software installed on a host computer connected to the network, wherein the host driver software interfaces with host application software and host operating system software, the host operating system software having a serial port API application program interface, wherein the host driver software receives serial port

data over the network using the serial port application program interface, the serial port application interface comprising:
with an intercharacter interval timer setting that measures a time interval between the end of a stop signal of one character and the beginning of a start signal of a next character; and
an intercharacter interval setting;
wherein the application program interface terminates a read operation when the time interval measured by the intercharacter interval timer exceeds the intercharacter interval setting
and wherein the host driver software receives serial port data over the network using the serial port API; and
a device server connected to the network and in electrical communication with one or more serial devices, the device server comprising:
an intercharacter interval timer that measures a time interval between the end of a stop signal of one character and the beginning of a start signal of a next character; and
an intercharacter interval setting;
wherein the device server ~~sends~~ receives the serial port data over the network and measures an intercharacter interval corresponding to the intercharacter interval timer setting of the serial port API application program interface, and wherein the device server returns a flag to the host computer when the time interval measured by the intercharacter interval exceeds a preset value timer exceeds the intercharacter interval setting, and wherein the flag signals the host computer that a read operation has terminated.

14. (Currently amended) A method for facilitating communication between a host computer and a serial device over a network, the method comprising:

transmitting data in a standard serial port format over a local area network to a selected serial device ~~having a FIFO register and a queue~~;

receiving the data at a device server connected to the network, the device server having one or more serial ports connected to one or more serial devices, one of the one or more serial devices being the selected serial device;

storing the received data temporarily in a buffer;

reading the received data from the buffer;

writing the read data to a FIFO register associated with the selected serial device, such that if the FIFO register is empty, the read data is written to the FIFO register until the FIFO register is full and the remaining data is written to ~~the~~ a memory queue associated with the selected serial device.

15. (Original) The method of claim 14 wherein the step of transmitting comprises:

encoding the data into frames; and

placing the frames onto the local area network.

16. (Original) The method of claim 14 wherein the serial devices are connected to the device server via serial cables.

17. (Original) The method of claim 14 wherein the step of transmitting comprises:

converting information from an application on the host computer into the data in the standard serial port format using a device specific serial driver;

transferring the data in kernel space on the host computer from a serial port buffer to a transport buffer using a server driver;

encoding the data in the transport buffer; and

transmitting the encoded data onto the local area network.

18. (Original) The method of claim 17 wherein the step of receiving comprises:

decoding a received encoded data; and
storing the decoded data in the buffer.

19. (Currently amended) A method for eliminating synchronization latencies in a remote device server for facilitating communication between a host computer and a selected serial device, the method comprising:

receiving a read-operation-ending intercharacter interval value corresponding to the selected serial device over a network link from the host computer to the remote device server;

transmitting data in a standard serial port format ~~and a parameter for a desired intercharacter timer interval~~ over a network link from the selected serial device to [[a]] the remote device server;

receiving the data ~~and the parameter~~ with the remote device server;

~~writing the data to the selected serial device;~~

measuring ~~a time interval of an~~ intercharacter interval of the data with the remote device server by comparing the end of a stop signal of one character and the beginning of a start signal of a next character; and

~~returning a flag to the host computer if the time interval exceeds the parameter~~

transmitting the data over the network link from the remote device server to the host computer;

transmitting a flag over the network link from the remote device server to the host computer when the intercharacter interval of the data from the selected serial device exceeds the read-operation-ending intercharacter interval value corresponding to the selected serial device;

receiving the flag with the host computer; and

terminating a read operation at the host computer.

20. (Currently amended) A method for facilitating communication between a host computer and a remote serial device, the method comprising:

transmitting serial data from an application on the host computer over a network link;

receiving the serial data from the network link with a device server;

storing temporarily the serial data in a buffer; and

transferring one or more bytes of the serial data from the buffer to the remote serial device when the one or more bytes appears in the buffer without waiting for a specified byte count or a polling period.

21. (Currently amended) The method of claim 20, wherein the serial data is transferred from the buffer ~~semi-blocking read returns data to the applications on the device server~~ as soon as data is available up to a predefined number of bytes.